

	10	20	30	40	50	60	70	80	90	100	110	120
-K-----	-A-K-----	RRVITGMGVVSPGLGHDVDFVFNLLSGESGISLDR-----	FDASKFPTRIAGEIKS-----	FSTDGY-IDPK								
At KASI.pro	IS-----	A-----	SASTVSAPKRETDPK--	KRVVITGMGLVSVCGNDVDAYEKLSSGESGISLDR-----	FTASKFPTRFGGQIRG-----	FSSEGY-IDGK	81					
Br Kas 50.pro	-----	A-----	SSSASVSAPKRETDPK--	KRVVITGMGLVSVCGNDVDAYEKLSSGESGISLDR-----	FDASKFPTRFGGQIRG-----	FSSEGY-IDGK	79					
Ch KAS I .pro	-----	-----	SSTVAAALELVDPPCCRNARS-----	-----	-----	-----	24					
Ch KASI-1.pro	KL-----	TLTKGKS-----	WSSTVAAALELVDPPCCRNARSAGMLVSVFGSDVSVYKLLSGESGISLDR-----	FNATGY-IDGK	91							
Cpu KAS I .PRO	RA-----	A-----	SPTVSAPKRETDPK--	KRVVITGMGLVSVFGSDVDAYDKLLSGESGIGPIDR-----	FNEMGY-IDGK	80						
cpuKASI-1.PRO	RA-----	A-----	TASAPKRESDPK--	KRVVITGMGLVSVFGSDVDAYDKLLSGESGISLDR-----	FNATGY-IDGK	78						
Hv Kas12.pro	-----	-----	TSAAAPQRETDPR--	KRVVITGMGLVSVFGSDVDYFDRLLAGESGVGPIDR-----	FSSEGY-IDGK	75						
RcKas50.pro	NN-----	-----	NTTISAPKREKDPK--	KRVVITGTGLVSVFGNDVDYDKLLAGESGISLDR-----	FNSQGY-IDGK	79						
Cc Kas.pro	-----	-----	KRETDPK--	KRVVITGMGLVSVFGSDIDNFYNNLLGQSGISLDR-----	FSSEGY-IDGK	70						
Ch KAS IV-1.pro	KK-----	K-----	PSIKQ-----	KRVVITGMGVVTPLGHDPDVFNLLDGTSGISEIET-----	FSTDGW-VAPK	71						
Ch KASIV.pro	NK-----	K-----	PATKQ-----	KRVVITGMGVVTPLGHDPDVFNLLDGTSGISEIEN-----	FSTDGW-VAPK	71						
Cpu KASIV.pro	KK-----	K-----	PSIKQ-----	KRVVITGMGVVTPLGHDPDVFNLLDGTSGISEIET-----	FSTDGW-VAPK	71						
Cw KASA-1.pro	KK-----	K-----	PVIKQ-----	KRVVITGMGVVTPLGHEPDVFNLLDGTSGISEIET-----	FSTDGW-VAPK	71						
Cw KasA-2.pro	KK-----	K-----	PVKQ-----	KRVVITGMGVVTPLGHDPDVFNLLDGTSGISEIET-----	FSTDGW-VAPK	71						
Hv KasORF22 (KAS I)	KK-----	R-----	PDVKQ-----	KRVVITGMGVVTPLGHDPDVFNLLDGHSGISEIET-----	FSTEGW-VVPEK	71						
Hv KasORF25 (KAS I)	NN-----	K-----	SETKQ-----	KRVVITGMGVVTPLGHEPDVFNLLDGTSGISEIEN-----	FSTDGW-VAPK	71						
RcKas46.pro	NK-----	K-----	PLMKQ-----	KRVVITGMGVVSPGLGHDIDVFNLLDGTSGISQIDS-----	FSTDGW-VAPK	71						
Ce.KAS.PRO	MK-----	LKINKN-----	FEM-----	KRVVITGMGLVSVFGSDVFNLLDGTSGISEIET-----	FSTDGW-VAPK	84						
CEM.pro	MS-----	-----	-----	KRVVITGLGVVTPLGPSLSNESWGLLSKNGLTPITSLPNYEDYKLRKSIPTITVKGIPENFQENSAINKLLFTSQ	83							
Ec KAS II.pro	-----	-----	MSK-----	KRVVITGLGLMLSPVGNVVESTWALLAQSGISLIDH-----	FNCEI-IDPK	66						
Ec Kasi.pro	M-----	-----	-----	KRVVITGLGIVSSIGNNQEVILASLREGSGITFSQE-----	LDTGL-IDRK	63						
M.tub.KasA.pro	MSQP-----	STANGG-----	-----	FPSVVVTAVTATISIPDIESTWKLAGEGSHALE-----	DPVDSHMGR	75						
M.tub.KasB.PRO	MGVP-----	PLAGASRTDM-----	EGTFAPMTTELVTGKAFPPVVVVTGIMATTAIDTAETWKLIDRQSGIRTLDD-----	PFVEEFDLPVRIGGHL-----	EEFDHQLTRI	95						
Rat. Kas.PRO	-----	SRASQRRAMEEVITAGMSGKLPESENLOEFWANLIGGVDMVTDDDR-----	RWKAGL-----	YGLPKR-SGKLADL-----	SKFDASFFGVHPK	79						
RtNode.pro	MD-----	-----	-----	RRVITGIGGLGGLGTAAASIWKEMREGPSAISPIT-----	TDLYDLEGTVGLEIK-----	AIP-EHDIPK	64					
StrepPolyk.pro	VN-----	-----	-----	RRVITGIGVAPGAVGTPFWELLISCTTATRAIST-----	FDPVAAGLSAE	65						
SYN KAS.pro	-----	-----	MANLEK-----	KRVVITGLGATTPIGNTLQDYWQGLMEGRNGIGIPTR-----	FDAEQACRFGGEVKD-----	FDAEQ-LDRK	69					
V.pro	SDYHNFHNKAVARPLFFCLFWRTSVANN-----	-----	-----	RRVITGLGIVSPVGNVATAWEAIAKSGISGIEINIEH-----	FDTTNFSTKFAGLVND-----	FDAESVGINRK	94					

Figure 12-1





At KAS1.pro  
Br Kas 50.pro  
Ch KAS I .pro  
Ch KAS1-1.pro  
Cpu KAS I .PRO  
cpuKAS1-1.PRO  
Hv Kas12.pro  
RcKas50.pro  
Cc Kas.pro  
Ch KAS IV-1.pro  
Ch KASIV.pro  
Cpu KASIV.pro  
Cw KASA-1.pro  
Cw Kasa-2.pro  
Hv KasORF22(KAS I)  
Hv KasORF25(KAS I)  
RcKas46.pro  
Ce.KAS.PRO  
CEM.pro  
Ec KAS II.pro  
Ec KasI.pro  
M.tub.KasA.pro  
M.tub.KasB.pro  
Rat. Kas.pro  
RNode.pro  
StrepPolyk.pro  
Syn KAS.pro  
J.pro

LADAGVSPEDVNY INAHATSTPAGDLAEINAIAIKRVF---GQNS-ELKVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINLENP-----DPGVLDLLVGNKK-----EQHEVKVAL 370 380 390 400 410 420 430 440 450 460 470 480

LEDAGVSPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KSTS-GIKINATKSMIGHCLGAAGGLEAIAIATVKAINTGWLHPSINQFNP-----EQAVDFDT-VFNEK---KQHEVDVAI 411  
LEDAGVSPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KSTS-GIKINATKSMIGHCLGAAGGLEAIAIATVKAINTGWLHPSINQFNP-----EPAVDFDT-VANEK---KQHEVNVAI 409  
LEDAGVSPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KNTK-DIKINATKSMIGHCLGAAGGLEAIAIATIKGINTGWLHPSINQFNP-----EPSVEFDT-VANKK---QOHEVNVAI 330  
LEDAGVSPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KNTK-EITINATKSMIGHCLGAAGGLEAIAIATIKGINTGWLHPSINQFNP-----EPSVEFDT-VANKK---QOHEVNVAI 421  
LEDAGVSPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KNTK-DIKINATKSMIGHCLGAAGGLEAIAIATIKGINTGWLHPSINQFNP-----EPSVEFDT-VANKK---QOHEVNVAI 410  
LRDAGVAPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KNPS-EIKINATKSMIGHCLGAAGGLEAIAIATIKSITGWHPTINQFNP-----EPSVDFNT-VANKK---KQHEVNVAI 408  
LEDAGVSPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KNTS-DIKINATKSMIGHCLGAAGGLEAIAIATIKSITGWHPTINQFNP-----EPEVEFDT-VANEK---KQHEVNVGI 407  
LVDAGVSPEEVNY INAHATSTLAGDLAEINAIAIKRVF---KSTS-EIKINATKSMIGHCLGAAGGLEAIAIATIKAITGWLHPTINQFNP-----EPSVEFDT-VANKK---KQHEVNVAI 409  
LAQSGVSREDVNY INAHATSTPAGDIKEYQALIHCF---GQNN-ELKVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----EPQVTITD-VFNVK---KQHEVNVGI 400  
LAQSGVSREDVNY INAHATSTPAGDIKEYQALAHCF---GQNS-ELRVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DEGVDTKLLVGPCK---ERLINIKVGL 401  
LAQSGVSREDVNY INAHATSTPAGDIKEYQALIHCF---GQNR-ELKVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DEGVDTKLLVGPCK---ERLINIKVGL 401  
LAQSGVSREDVNY INAHATSTPAGDIKEYQALAHCF---GQNS-ELRVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DEGVDTKLLVGPCK---ERLINIKVGL 401  
LAQSGVSREDVNY INAHATSTPAGDIKEYQALAHCF---GQNS-ELRVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DEGVDTKLLVGPCK---ERLINIKVGL 401  
LADSGVAREEVNY INAHATSTQSGDLKEYEATVRCF---GQNP-QLRVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----EKVVDVGVLVGSEK---ERCEVKVAL 401  
LADAGVTRQDINYNVNAHATSTQGLKEFEALRCF---GQNP-QLRVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----EKVVDVGVLVGSEK---ERCEVKVAL 401  
LARSVSKEEVNY INAHATSTPAGDLKEYEALMRCF---SQNP-DLRVNSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----EEGVDTKLLVGPCK---ERLDIKVAL 401  
IGNAHLEPKDIGVNAHATSTPAGDKAEAAVKTIF---GEAASRVLSVSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----ETDEGNGINLLRENQKWSVSGNKSRSI 395  
LKWARLEPTDVIDVNAHATSTLLGDKAECLAVALPGRSKSPKLYISSNKGAIHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----ETDEGNGINLLRENQKWSVSGNKSRSI 395  
LRDAGIEASQIGVNAHATSTPAGDKAEAAVKTIF---GEAASRVLSVSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----ETDEGNGINLLRENQKWSVSGNKSRSI 395  
MHGVDTF---IDYLNHSGTSTPVGDKELAAIREVF---GDKS---PAISATKAMTSHLSGAGVQEAIAIYSLLMLEHGFAPSIINIEEL-----DEGCDLDFVPHEAR---QVSGMEYTL 395  
LELAGLSPADIDHVNAGHTATPIGDAEANAIRVA---GCDQ---AAVYAPKSAHLSGAGVQEAIAIYSLLMLEHGFAPSIINIEEL-----DEGCDLDFVPHEAR---QVSGMEYTL 395  
IQLAGLAPGDIHVNAGHTATQVGDGLAEGRANAL---GQNR---PAVYAPKSAHLSGAGVQEAIAIYSLLMLEHGFAPSIINIEEL-----DPEIDLVDVAGEPR---YGD-DYRYAV 398  
YQPGGVAPESLEYIEAHGTGTGVDGDPQELNGITRSICAFRQSP---LLIGSTKSNMGPHERPASGLAALTUVLLSLENGVMAFNHFNHP---NPEIPALLDGRLLQWDRP---LPVRGGIVGI 420  
LADAEINPDVDYLNAGHTGTIVANDEMATAIKRVF---GDHAFQMSVSTKSMIGHCLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DPQCDLDTVPNVPR---EQR-C-GSM 399  
LDEARRDPSDVDYLNAGHTATQVGDGLAEGRANAL---GQNR---PAVYAPKSAHLSGAGVQEAIAIYSLLMLEHGFAPSIINIEEL-----DPEIDLVDVAGEPR---YGD-DYRYAV 398  
LKDGLKPEMVSYINAHGTSTPANDVTETRAIKQAL---GNHAYNIAVSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DPEIDLVDVAGEPR---YGD-DYRYAV 398  
IADAGITADKGVYNAHGTSTPAGDKAEAAVKSUF---GEHAYTIAVSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DPEIDLVDVAGEPR---YGD-DYRYAV 398  
IADAGITADKGVYNAHGTSTPAGDKAEAAVKSUF---GEHAYTIAVSTKSMIGHLLGAAGGLEAIAIATVKAIRGTGWIHPTINQFNP-----DPEIDLVDVAGEPR---YGD-DYRYAV 398

Figure 12-4

SNSFGFGGHNSVVAFAPEK--		490	500
At KASI.pro	SNSFGFGGHNSVVAFAPEK-P		431
Br Kas 50.pro	SNSFGFGGHNSVVAFAPEK-P		429
Ch KAS I .pro	SNSFGFGGHNSVVAFAPEK-P		350
Ch KASI-1.pro	SNSFGFGGHNSVVAFAPEK-P		441
Cpu KAS I.PRO	SNSFGFGGHNSVVAFAPEK-P		430
cpuKASI-1.PRO	SNSFGFGGHNSVVAFAPEK-P		428
Hv Kas12.pro	SNSFGFGGHNSVVAFAPEK-P		427
RcKas50.pro	SNSFGFGGHNSVVAFAPEK-P		428
Cc Kas.pro	SNSFGFGGHNSVVAFAPEK-P		420
Ch KAS IV-1.pro	SNSFGFGGHNSVVAFAPEK-P		420
Ch KASIV.pro	SNSFGFGGHNSVVAFAPEK-P		420
Cpu KASIV.pro	SNSFGFGGHNSVVAFAPEK-P		420
Cw KASA-1.pro	SNSFGFGGHNSVVAFAPEK-P		421
Cw Kasa-2.pro	SNSFGFGGHNSVVAFAPEK-P		420
Hv KasORF22(KAS I\	SNSFGFGGHNSVVAFAPEK-P		420
Hv KasORF25(KAS I\	SNSFGFGGHNSVVAFAPEK-P		419
RcKas46.pro	SNSFGFGGHNSVVAFAPEK-P		420
Ce.KAS.PRO	SNSFGFGGHNSVVAFAPEK-P		414
CEM.pro	SNSFGFGGHNSVVAFAPEK-P		442
Ec KAS II.pro	SNSFGFGGHNSVVAFAPEK-P		410
Ec Kasi.pro	SNSFGFGGHNSVVAFAPEK-P		406
M.tub.Kasa.pro	SNSFGFGGHNSVVAFAPEK-P		416
M.tub.KasB.PRO	SNSFGFGGHNSVVAFAPEK-P		438
Rat. Kas.PRO	SNSFGFGGHNSVVAFAPEK-P		418
RtNode.pro	SNSFGFGGHNSVVAFAPEK-P		401
StrepPolyk.pro	SNSFGFGGHNSVVAFAPEK-P		419
SYN KAS.pro	SNSFGFGGHNSVVAFAPEK-P		416
V.pro	SNSFGFGGHNSVVAFAPEK-P		441

Figure 12-5